**Claims:**

[30021158 US]

1. A self-balancing impedance bridge circuit apparatus for measuring RF power, the apparatus comprising:

a bridge circuit comprising a first branch connected to a second branch thereof; wherein

the first branch comprises a sensor device having an impedance value and a temperature coefficient associated therewith, a temperature of the sensor device being related to the impedance value;

the second branch comprises at least one electrical element capable of providing a selectable impedance value, the selectable impedance value biasing, when in use, the impedance value of the sensor device; and

the selectable impedance value is such that the impedance value of the sensor device corresponds to the temperature of the sensor device not exceeding a predetermined temperature.

2. An apparatus as claimed in Claim 1, wherein the temperature coefficient is a negative temperature coefficient.

3. An apparatus as claimed in Claim 1, wherein the sensor device is a bolometric device.

4. An apparatus as claimed in Claim 3, wherein the bolometric device is a thermistor.

5. An apparatus as claimed in Claim 1, wherein the at least one electrical element capable of providing the selectable impedance value is switchable.

6. An apparatus as claimed in Claim 5, wherein the at least one electrical element capable of providing the selectable impedance value is a network of impedances.

7. An apparatus as claimed in Claim 6, wherein the network of impedances comprises a first impedance, a second impedance, and a switch for connecting the first impedance or the second impedance in-circuit with respect to the bridge circuit.

8. An apparatus as claimed in Claim 1, further comprising another sensor device coupled to the sensor device.

9. An apparatus as claimed in Claim 8, wherein the sensor device behaves as series coupled to the another sensor device with respect to the bridge circuit, and the sensor device behaves as parallel coupled to the another sensor device, when an RF signal is applied at a node between the sensor device and the another sensor device.

10. An apparatus as claimed in Claim 1, wherein the bridge circuit further comprises:

a third branch coupled to a fourth branch, the third and fourth branches including a substantially same impedance; and

the third branch is coupled to the second branch and the fourth branch is coupled to the first branch.

11. A method of measuring RF power for a self-adjusting impedance bridge, the method comprising the steps of:

setting a selectable impedance value of a first branch of a bridge circuit so as to bias an impedance of a sensor device in a second branch of the bridge circuit coupled to the first branch of the bridge circuit, a temperature of the sensor device relating to the impedance of the sensor device; wherein

the sensor device has a temperature coefficient associated therewith; and

the selectable impedance value is such that the impedance of the sensor device corresponds to the temperature of the sensor device not exceeding a predetermined temperature.

12. A method as claimed in Claim 11, wherein the temperature coefficient is a negative temperature coefficient.

13. A method as claimed in Claim 11, wherein the sensor device is a bolometric device.

14. A method as claimed in Claim 13, wherein the bolometric device is a thermistor.

15. A method as claimed in Claim 11, wherein the step of changing the selectable impedance value comprises the step of:

switching the selectable impedance value between a first impedance value and a second impedance value so as to bias the impedance of the sensor device.

16. A method as claimed in Claim 15, wherein the selectable impedance value is provided by a network of impedances.

17. A method as claimed in Claim 16, wherein the network of impedances comprises a first impedance, a second impedance, and a switch; and the method further comprises the step of:

switching the first impedance or the second impedance in-circuit with respect to the bridge circuit.

18. A method as claimed in Claim 11, further comprising the step of:

providing another sensor device coupled to the sensor device.

19. An method as claimed in Claim 18, wherein the sensor device behaves as series coupled to the another sensor device with respect to the bridge circuit, and the sensor device behaves as parallel coupled to the another sensor device when an RF signal is applied at a node between the sensor device and the another sensor device.